LISTING OF THE CLAIMS

The following is a complete, marked-up listing of revised claims with a status identifier in parenthesis, underlined text indicating insertions, and strike through and/or double-bracketed text indicating deletions.

LISTING OF CLAIMS

1. (Currently Amended) A method of determining an indication of return loss of an antenna of a wireless communication system, comprising:

measuring, across a frequency band, at least powers of a signal received at communication equipment from an antenna connected to the communication equipment, the received signal including a leakage signal and a reflected signal, the reflected signal being a reflected portion of a test signal injected into a coupler towards the antenna, and the leakage signal being a portion of the test signal leaking from the coupler away from the antenna to the communication equipment;

first determining maximum and minimum powers of the received signal based on output of the measuring step; and

second determining at least an indication of return loss of the antenna based on the determined maximum and minimum powers, wherein the leakage signal is determined from an average sum of the absolute maximum powers and the absolute minimum powers of the received signal, and the reflected signal is determined from an average difference of the absolute maximum powers and the absolute minimum powers of the received signal.

2. (Original) The method of claim 1, wherein the measuring step samples the received signal at a fixed interval in at least measuring the power.

3. (Original) The method of claim 1, wherein

the measuring step measures the powers of the received signal in the frequency domain; and

the second determining step determines an average voltage of the reflected signal based on the determined maximum and minimum powers of the received signal, and determines an indication of the return loss from the determined average voltage of the reflected signal.

4. (Original) The method of claim 3, wherein the second determining step converts the determined average voltage of the reflected signal to a time domain power of the reflected signal, and determines an indication of the return loss from the determined time domain power of the reflected signal.

5. (Original) The method of claim 4, further comprising:

judging whether the antenna is satisfactorily connected to the base station when the time domain power of the reflected signal exceeds a threshold power.

6. (Original) The method of claim 4, wherein the second determining step converts the time domain power of the reflected signal into a return loss of the antenna.

7. (Original) The method of claim 6, further comprising:

judging whether the antenna is satisfactorily connected to the base station when the determined return loss exceeds a threshold value.

8. (Original) The method of claim 1, wherein the first determining step estimates at least one of the maximum and minimum powers using the output of the measuring step.

9. (Original) The method of claim 8, wherein the first determining step estimates a waveform approximating the received signal based on the output of the measuring step, and estimates at least one of the maximum and minimum powers using the estimated waveform.

10. (Original) The method of claim 9, wherein the first determining step estimates a value representing periodicity of the received signal using the output of the measuring step, and estimates the waveform using the estimated value.

11. (Original) The method of claim 1, further comprising:

judging whether the antenna is satisfactorily connected to the base station based on the determined indication of return loss.

12. (Original) The method of claim 11, further comprising:

issuing an alarm when the judging step judges that the antenna is not satisfactorily connected to the base station.

13. (Currently Amended) An apparatus for determining an indication of return loss of an antenna of a wireless communication system, comprising:

a tone generator generating a test signal;

a coupler injecting the test signal into a conductor towards the antenna; and

communication equipment, connected to the antenna via the conductor, measuring, across a frequency band, at least powers of a signal received at a base station from the antenna, the received signal including a leakage signal and a reflected signal, the reflected signal being a reflected portion of the test signal and the leakage signal being a portion of the test signal leaking from the coupler away from the antenna to the communication equipment; determining maximum and minimum powers of the received signal based on output of the measuring; and determining at least an indication of return loss of the antenna based on the determined maximum and minimum powers, wherein the leakage signal is determined from an average sum of the absolute maximum powers and the absolute minimum powers of the received signal, and the reflected signal is determined from an average difference of the absolute maximum powers and the absolute minimum powers of the received signal.

14. (Original) The apparatus of claim 13, wherein the communication equipment is a receiver of a base station.

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END OF CLAIM LISTING

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